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P. pubescens. Through eastern Kansas.
Chætochloa lævigata perennis. Reno, Stafford, Meade, Gray.
Aristida dichotoma. Kingman.
A. gracilis. Montgomery, Chautauqua.
Muhlenbergia capillaris (Lam.) Trin. Elk, Chautauqua.
Brachyelytrum erectum (Schreb.) Beauv. Wyandotte (MacKenzie).
Sporobolus argutus. Stafford, Edwards.
Agrostis elliottiana Schultes. Chautauqua.
Chloris elegans HBK. Reno.
Eatonia pennsylvanica. Montgomery, Cherokee.
Poa sylvestris. Bourbon, Montgomery, Nemaha.
Agropyron tenerum. Cheyenne.

ADDITIONS TO THE FLORA OF KANSAS.

By B. B. SMYTH, Topeka. Read (by title) before the Academy January 2, 1897.

The past two years have been a very fruitful period in botanical work. More collectors than usual have been at work in Kansas, and altogether it has been a period of unusual activity. The results of the work of the government collector, Mr. Chas. H. Thompson, through the southern and southwestern parts of the state in 1893, have been worked up by Prof. A. S. Hitchcock, and published by the Division of Botany at Washington, D. C., as a contribution from the United States National Herbarium.

Professor Hitchcock has explored pretty thoroughly the southeastern, southern, and, with his assistants, the southwestern parts of the state, and added many new plants to the herbarium of the Agricultural College.

The writer has taken a second trip along the line of the Arkansas river from Hutchinson to Coolidge, at the west line of the state, and returned through Wichita, Scott, Ness, Barton, McPherson and Marion counties. The use of a bicycle and the usually splendid condition of the roads in the western parts of the state greatly facilitated visiting remote places. Much of interest and value was collected and noted on the trip. A trip into Allen, Anderson and Woodson counties was also taken, and some important collections made. Add to this that some of the material collected on previous trips into the southwestern, western and northwestern parts of the state has been worked up; though there still remains some work to be done in determining plants of recent and former collections.

Mr. Elam Bartholomew, of Rockport, Rooks county, has worked incessantly among the parasitic fungi, and has not only discovered many plants new to the state, but has discovered many that are new to science. A part of the results of his work is here given.

Mr. J. A. Rich, of Ellis, has collected pretty thoroughly the plants of Trego county and has made some collections in Gove. Nearly 400 specimens have been sent down by him to the state herbarium from Trego county and 26 from Gove county. Among all these are several that have been hitherto unreported, and most of these are given in the following list, though a few yet remain to be determined.

Numerous plants have been sent in from nearly all parts of the state by people who were unfamiliar with them. Nearly all such have proved to be familiar or well-known plants, and the names returned to the senders. In case the plants happened to be of economic interest, descriptions and remarks concerning such have been published in the *Kansas Farmer.*

The following list contains the names of plants published for the first time in this Flora of Kansas or Additions; and in all cases where first publication was made outside the state, the place of such publication is given. Where no such credit is given, this is first publication.

FLOWERING PLANTS.

— Argemone alba Lestiboudois. (Hitchcock, in Bull. Kan. Exp. Sta., "Kansas Weeds," No. 2.) This has been in the State herbarium for a long time, labeled "*Argemone platyceras* L. & O." Botanists seem disposed to recognize two species of *Argemone* in this state; but the differences are differences of degree, not of kind. The forms are too near alike to be considered as separate species, or even strongly marked sub-species. The elder name is *A. alba;* the name *A. platyceras* must fall.

1. Erysimum inconspicuum MacMillan. (Metasp. Minn. Val., 1892, p. 268.) Thomas county; frequent. In State herbarium.

2. Sophia incisa Greene. (Pittonia, 1896, p. 95.) "Kansas." Britton, in Illust. Flora Northern U. S. and Can., II, 145. This does not appear to agree with the plant, which is very common in Kansas, and heretofore listed under the name of *Sisymbrium canescens.*

3. Cristatella erosa Nutt. Hamilton county; rather common in the sand-hills (Hitchcock). Cont. U. S. Nat. Herb., III, 541 (1896).

4. Arenaria fendleri Gray. Hamilton and Wichita counties; frequent in rocks. Also sent in from Trego county by J. A. Rich. (No. 87.)

5. Arenaria hookeri Nutt. Trego county; in State herbarium, sent in by J. A. Rich. (No. 25.) Also collected by the writer in Norton, Decatur, Sherman, Wichita, Hamilton, and Finney counties.

6. Arenaria texana Britton. Norton county; frequent. In State herbarium. Determined by Dr. B. L. Robinson, in Proc. Amer. Acad., 1894, p. 302.

7. Cerastium brachypodum Robinson. Shawnee county; occasional. In state herbarium.

8. Loeflingia texana Hook. Wichita county; in State herbarium.

9. Astragalus kentrophyta Gray. Wichita county; in State herbarium.

— Astragalus filifolius (Gray). Hamilton county; in State herbarium. Heretofore listed under name of *A. pictus filifolius* Gray.

10. Astragalus scobinatulus Sheldon. Hamilton county; abundant (Hitchcock). Cont. U. S. Nat. Herb., III, 543 (1896).

11. Desmodium longifolium Nutt. Sedgwick county (Carleton).

12. Lespedeza nuttallii Darl. Kansas (N. L. Britton). Trans. N. Y. Acad. Sci., XII, 1893, p. 61.

13. Lespedeza violacea Pers. Kansas (N. L. Britton). L. c., p. 62.

14. Orophaca cæspitosa Britton. Kansas (E. P. Sheldon). Bull. Geol. Surv. Minn., IX, 117, (1894,) under name of *Astragalus gilviflorus.*

15. Petalostemon macrostachyus Torr. Grant county; on sandy knolls along south fork of Cimarron; rare (Hitchcock). Cont. U. S. Nat. Herb., III, 543, (1896).

16. Petalostemon decumbens Nutt. Chalk hills of Meade and Pratt counties. In State herbarium. Closely related to *P. oligophyllus.*

17. Petalostemon oligophyllus Torr. Phillipsburg; abundant in old brickyard and other abandoned diggings. In State herbarium. Heretofore listed under name of P. gracilis, it being considered by Doctor Torrey a variety of that species; but now regarded by A. A. Heller as a distinct species. Some of its

forms grade close to P. candidus; but the latter species, which is common throughout the state, may be readily distinguished by its thinner leaflets, more compact inflorescence, fewer, longer, and more cylindrical spikes (commonly only one), more acuminate bracts, and more solitary and strictly upright habit.

18. Psoralea micrantha Gray. Riley county (Kellerman). Bull. Torr. Bot. Club, 1894, p. 94.

— Agrimonia hirsuta Bicknell. (Bull. Torr. Club, 1896, p. 511; pl. 282, fig. 1.) Shawnee county; frequent. This is the species that is listed in Smyth's Check-list of the Plants of Kansas as "forma *intermedia*."

19. Agrimonia mollis Britton. (Bull. Torr. Club, 1892, p. 221; 1896, p. 515; pl. 282, fig. 3, Bicknell.) Shawnee county; common enough. In State herbarium.

— Amelanchier spicata Dec. Low Juneberry. Introduced into Kansas by nurserymen, and having a slight tendency to run wild.

20. Cerasus besseyi (Bailey). Western sand cherry. Phillips county; frequent in dry hills. In State herbarium. Too near *Cerasus pumila* to be considered a separate species.

21. Cercocarpus parviflorus H. & A. Western Kansas. N. L. Britton, in Illust. Flora, II, 223.

— Fragaria americana Britton. (Bull. Torr. Club, XIX, 222.) This is the wild strawberry of our fields and woods instead of *F. vesca*, as heretofore reported. There is really very little difference, hardly enough upon which to erect a new species; but if there is any difference the patriotic American will recognize it for the sake of the name.

22. Potentilla recta L. Topeka; one or two bunches introduced from the east found in the state yard before improvement. Listed heretofore as P. gracilis.

23. Prunus watsoni Sargent. Sand plum. Central and western Kansas. First collected by Dr. Louis Watson, of Ellis.

24. Adelia acuminata Mx. Labette county. Reported by Dr. W. S. Newlon.

25. Epilobium lineare Muhl. Anderson county; in a marshy place; not frequent. In State herbarium.

26. Œnothera fendleri Gray. Sherman county; in bluffs; not frequent. In State herbarium.

27. Mentzelia multiflora Gray. Hamilton county; frequent in cultivated lands and sedimentary deposits in the low land (Hitchcock). Cont. U. S. Nat. Herb., III, 545 (1896).

28. Sanicula gregaria Bicknell. Fort Riley (E. E. Gayle). Bull. Torr. Club, 1895, p. 354.

29. Grindelia grandiflora Hook. Trego county; sent in by J. A. Rich. (No. 317.) This differs so decidedly from *G. squarrosa* that it is entitled to rank as a species. In *G. squarrosa* the leaves are spatulate to linear-oblong or obovate, with crenulate-denticulate to spinulosely serrulate teeth; usually slightly gummy and covered with minute translucent dots; the scales of the involucre are attenuate and recurved or squarrose and very gummy and sticky; the leaves near the heads are reduced, and there are no bracts immediately under the heads. In *G. grandiflora* the leaves are elliptical to ovate, broadest in the lower half, not dotted or gummy, and having spinosely-dentate teeth, like those of the American holly, or softly aristate, almost ciliate, serrate teeth; margin of leaves and teeth pale; the scales of the involucre are acuminate, appressed, and only slightly gummy; and each head is subtended by a leafy bract, almost laciniate, the serrations are so deep.

30. Hymenatherum aureum Gray. Hamilton county; on an island in the Arkansas river, five miles east of Syracuse; rare. Hitchcock, Cont. U. S Nat. Herb., III, 545.

31. Hymenopappus flavescens Gray. Grant county hillsides. Hitchcock, l. c., p. 547.

32. Krigia oppositifolia Raf. Dwarf dandelion. Shawnee county; rare. Collected by W. A. Harshbarger. In the State herbarium.

33. Lygodesmia rostrata Gray. Hamilton county; north slope of sand-hills. Hitchcock, Contrib., III, 548.

34. Vernonia marginata Britton. Morton county; by a pond in North fork of Cimarron; rare. Hitchcock, l. c., 545.

35. Gilia aggregata Spreng. Stevens county; abundant in the sand hills. Hitchcock, Contrib., III, 548.

36. Gilia inconspicua Sweet. Hamilton county, on land subject to overflow by the river; rare. Hitchcock, l. c., 548.

37. Echinospermum texanum Scheele. Hamilton county, on ditch banks; rare. Hitchcock, l. c., 549.

38. Heliotropium curassavicum L. Grant county, in bottom of dried-up ponds; abundant. Hitchcock, l. c., 548.

39. Cuscuta neuropetala Engelm. Hamilton county; frequent in low lands. Hitchcock; l. c., 549.

40. Chamæsaracha conioides Britt. Hamilton county; frequent about excavations. Hitchcock, l. c., 549.

41. Physalis comata Rydberg. Rooks county (Bartholomew). Bull. Torr. Club, 1895, 306.

42. Physalis macrophysa Rydb. Shawnee county (Popenoe). Rydberg, l. c., 308.

43. Collinsia violacea Nutt. Cherokee county. This was first found by Thos. Nuttall, in 1833, in the Indian Territory, "on the hills and upland woods of the Arkansas and Red rivers," and is represented as abundant. (See Trans. Amer. Philos. Soc., n. s., V, 179.) It has rarely been collected since, and is therefore a "little-known species," according to Gray in Synop. Flora of N. A. Collected in Cherokee county and reported this year (1896) for the first time from Kansas, by Chancellor F. H. Snow. It differs from *C. verna* in its thickish leaves, violet flowers (about three to a whorl instead of six), and in having its capsules about 10-seeded.

44. Atriplex canescens James. Trego county; not rare. In State herbarium. Sent in by J. A. Rich. (No. 258.)

45. Atriplex nuttallii Watson. Gove county; sent in to State herbarium by J. A. Rich. ("Y")

46. Salsola tragus L. Russian thistle. Sent in by W. G. Riste, from Colby. Sent in also from Greeley, Norton, Cloud, Republic, Jewell, Phillips, and Decatur counties.

47. Eriogonum campanulatum Nutt. Gove county; in State herbarium. Sent in by J. A. Rich. ("X")

48. Eriogonum cernuum Nutt. Sherman county; in State herbarium.

49. Polygonum littorale Link. Shawnee county; in State herbarium.

50. Euphorbia stictospora Engelm. Coolidge, Kan., on dry hills. In State herbarium. Sent also from Trego county, by J. A. Rich. (No. 262.)

51. Corylus rostrata Ait. Kansas. Britton, in Illust. Flora, I, 508.

52. Sagittaria ambigua J. G. Smith. McPherson county; collected by J. E. Bodin, 1887, and by A. S. Hitchcock, 1892. Smith, in Ann. Rep. Mo. Botanic Garden, 1895, p. 48; pl. 17.

53. Sagittaria arifolia Smith. Trego county; in State herbarium. Sent by J. A. Rich. (No. 218.)

54. Sagittaria calycina Engelm. Shawnee county; frequent in fresh water. In State herbarium.

— Sagittaria latifolia Willd. Common in eastern Kansas; specimens in variety in Kansas herbarium. This has heretofore been listed under name of *S. variabilis* Eng.

55. Sagittaria longiloba Eng. Western Kansas. Smith, l. c., p. 42; pl. 11.

— Spiranthes cernua L. C. Rich. Trego county; sent in by J. A. Rich. (No. 331.) This is an additional locality for this rare plant.

56. Juncus aristulatus Mx. Cherokee county (W. S. Newlon). F. V. Coville, in Proc. Biol. Soc. Wash., VIII, 1893, 124.

57. Juncus balticus Willd. Barton county; in State herbarium.

58. Juncus diffusissimus Buckley. Southeastern Kansas. Coville, in Illust. Flora, I, 396.

59. Juncus marginatus Rostk., subsp. setosus Coville. Stafford and Kingman counties. Carleton, in Cont. U. S. Nat. Herb., I, 217.

60. Juncus robustus Cov. Southeastern Kansas. Coville, in Illust. Flora, I, 395.

61. Carex castanea Wahl. Morris county; in State herbarium.

62. Carex filifolia Nutt. Barton county; frequent. In State herbarium.

63. Carex interior Bailey. Bogs and swamps, Kansas. L. H. Bailey, in Bull. Torr. Club, 1893, p. 426.

64. Carex lanuginosa Mx., subsp. Kansana Britton. Kansas. Britton, in Illust. Flora, I, 305.

65. Cyperus hallii Britt. (Bull. Torr. Club, XIII, 211.) Kansas. Britton, in Illust. Flora, I, 240.

66. Cyperus ovularis Torr. Shawnee county; in State herbarium.

67. Eleocharis atropurpurea Kunth. Frequent in wet places in western Kansas. Collected in Pratt county by the writer. Sent in also from Trego county, by J. A. Rich. (No. 231.)

68. Fimbristylis castanea Vahl. Shawnee county; not common. In State herbarium.

69. Fuirena simplex Vahl. Kingman county. In State herbarium. Sent in by Mrs. James Jackson.

70. Hemicarpha subsquarrosa Nees, subsp. aristulata Cov. Kingman county (Carleton). Coville, in Bull. Torr. Bot. Club, 1894, p. 36.

71. Scirpus campestris Britton. Garden City. In State herbarium. Collected by the writer.

72. Scirpus lineatus Mx. Shawnee county. In State herbarium. Collected by the writer.

73. Aristida fasciculata Torr. Trego county; sent to State herbarium by J. A. Rich. (No. 380.) This differs from *A. purpurea* in being taller and not so deep a purple. The awns, too, are only slightly divergent.

74. Brachyelytrum erectum Beauv. Shawnee county; occasional in slightly shaded, moist spots. In State herbarium. Collected by the writer.

75. Lolium temulentum L. Topeka; frequent. In State herbarium. Collected by the writer.

76. Oryzopsis cuspidata Vasey. Collected in Phillips county by the writer. In State herbarium.

77. Panicum obtusum HBK. Ford county; occasional. In State herbarium. Collected by the writer.

78. Panicum pubescens Lam. Shawnee county; occasional in gardens, in shelter of blackberry bushes. In State herbarium. Collected by the writer.

— Panicum scribnerianum Nash. This is the grass that has been known in this state as *P. scoparium* Lam. Mr. Geo. V. Nash points out (Bull. Torr. Club, 1895, 421) that *P. scoparium* Lam. grows only in the southern mountains, and names our grass *P. scribnerianum*, as stated.

— Poa arida Vasey. No. 1716 of Smyth's Check-list, collected in Saline county in 1887 by Joseph Henry, and in Rooks county in 1892 by Elam Bartholomew, and listed as *Poa andina* Nutt., has a new name given by Dr. Geo. Vasey; because it is not the same species as *Poa andina* of Chili, though it was supposed to be by Nuttall. Cont. U. S. Nat. Herb., I, 270.

79. Poa wolfii Scribn. Kansas. Scribner, in Bull. Torr. Club, 1894, p. 228.

80. Sporobolus argutus Kunth. Seward county; collected by the writer. In State herbarium.

81. Sporobolus longifolius Wood. Collected at Wichita in 1890. Determined by Geo. V. Nash. Bull Torr. Club, 1895, p. 463.

— Sporobolus texanus Vasey. Cloud and Republic counties. Collected by John H. Schaffner, Columbus, Ohio. This was listed in "Additions to the Flora of Kansas," Trans. Kan. Acad. Sci., XIII, p. 102, as found in Clark county by Mr. Carleton. Mr. Schaffner's find is the farthest north from which this grass is yet reported.

FUNGI.

Hymenomycetes (*Mushrooms*).

82. Tricholoma semivestitum Peck. On old grass roots in sandy prairie, Rooks county (Elam Bartholomew). Dark brown pileus. Chas. H. Peck, in Bull. Torr. Bot. Club, 1895, 485.

83. Lepiota mutata Peck. Ground in woods, Rooks county, July, 1896 (Bartholomew). L. c., 1896, 411.

84. Collybia microspora Peck. Wet ground under bushes, Rooks county (Bartholomew). Lamellæ pure white, changing to rusty brown in drying. L. c., 1895, 486.

85. Marasmius subtomentosus Peck. Abundant on roots of grass and other plants in sandy soil, Rooks county (Bartholomew). L. c., 487.

86. Marasmius badius Peck. Decaying sticks lying on wet ground, Rooks county (Bartholomew). L. c., 487.

87. Pistillaria bartolomæi Ellis & Everhart. On dead stems of *Callirhoe involucrata*, Rooks county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, p. 441.

88. Volvaria striatula Peck. Wet ground, under weeds, Rooks county (Bartholomew). Peck, Bull. Torr. Club, 1895, 487.

89. Pluteus stercorarius Peck. Manure heaps, Rooks county (Bartholomew). L. c., p. 448.

90. Flammula decurrens Peck. Wet ground in shade of bushes, Rooks county (Bartholomew). Sulphur yellow. L. c., 489.

91. Stropharia cæsifolia Peck. Low sandy pastures, Rooks county (Bartholomew). Lamellæ light blue. L. c., 489.

92. Hypholoma cutifracta Peck. About stumps of Lombardy poplar, Rockport (Bartholomew). L. c., 490.

93. Psathyrella leucostigma Peck. Wet ground under trees (Bartholomew). L. c., 490.

94. Psathyrella bartholomæi Peck. Rich ground in shade of trees (Bartholomew). L. c., 490.

95. Psathyrella gracillima Peck. Damp ground, among weeds, Rooks county, July, 1896 (Bartholomew). L. c., 1896, 417.

96. Psathyrella debilis Peck. Damp ground, attached to decaying stems, Rooks county, July, 1896 (Bartholomew). L. c., 418.

97. Coprinus calyptratus Peck. Open cultivated ground, Rooks county (Bartholomew). L. c., 1895, 205.

98. Coprinus ebulbosus Peck. At the base of cottonwood stumps, Rooks county (Bartholomew). L. c., 491.

99. Coprinus laniger Peck. Base of cottonwood stumps, Rooks county (Bartholomew). L. c., 491.

100. Polyporus kansensis Ellis & Bartholomew. On the base of a rotten stump, Pottawatomie county, October, 1893 (Bartholomew). Erythea, IV, 1896, p. 1.

101. Polyporus cryptopus E. & B. On the ground in sandy pastures, attached to dead grass roots, Rooks county, July, 1895 (Bartholomew). Erythea, l. c., p. 79.

102. Polyporus bartholomæi Peck. Decaying sticks and. chips on damp ground, Rooks county, July, 1896 (Bartholomew). Peck, Bull. Torr. Club, 1896, 418.

103. Tylostoma punctatum Peck. Sandy ground in pastures, Rooks county, July, 1896 (Bartholomew). L. c. 419.

Myxomycetes (*Slime Molds*).

104. Stemonitis webberi Rex. Collected by H. J. Webber, Manhattan. Ferruginous-colored spores. Dr. Geo. A. Rex, in Proc. Acad. Nat. Sci. Phila., 1891, p. 390.

105. Cribraria violacea Rex. Collected by W. T. Swingle, Manhattan. L. c., 394.

106. Hemiarcyria varneyi Rex. Collected by Miss May Varney, Manhattan. L. c., 396.

Pyrenomycetes (*Black Fungi*).

107. Rosellinia limoniispora Ellis & Everhart. On dead leaves of *Fraxinus*, Rooks county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1894, p. 326.

108. Rosellinia cæspitosa E. & E. On dead limbs of *Celtis occidentalis*, Rooks county (Bartholomew). L. c., p. 327.

109. Rosellinia ostiolata E. & E. On bark of *Ulmus americana*, Rooks county (Bartholomew). L. c., 327.

110. Rosellinia pinicola E. & E. On a weatherbeaten pine board, Rockport (Bartholomew). L. c., 327.

111. Rosellinia muriculata E. & E. On inner surface of bark of *Populus monilifera*, Rooks county, December, 1894 (Bartholomew). Perithecia black and muriculate-roughened. Ellis & Everhart, l. c., 1895, 416.

112. Melanomma moriculum E. & E. On dead limbs of *Morus*, Rooks county (Bartholomew). L. c., 1894, 328.

113. Melanomma dealbatum E. & E. On old decorticated, weatherbeaten cottonwood logs, Rooks county (Bartholomew). L c., 328.

114. Melanomma subcongruum E. & E. On outer bark of cottonwood trees, Rooks county, September, 1894 (Bartholomew). L. c., 1895, 417.

115. Trematosphæria fraxini E. & E. On dead limbs of *Fraxinus viridis* that had lain in water for some time, Rooks county (Bartholomew). L. c., 1894, 329.

116. Chætomium glabrescens E. & E. On a rotten limb, probably willow, Rooks county (Bartholomew). L. c., 1893, 130.

117. Teichospora aspera E. & E. On old cottonwood boards, Rockport (Bartholomew). L. c., 131.

118. Teichospora amygdaloides E. & E. On the bark of *Salix amygdaloides*, Rooks county (Bartholomew). L. c., 1894, 330.

119. Teichospora clavispora E. & E. On bark of *Negundo aceroides*, Rockport (Bartholomew). L. c., 330.

120. Teichospora crossota E. & E. On the weathered inner surface of elm bark, Rooks county (Bartholomew). L. c., 331.

121. Teichospora piriospora E. & E. On outer bark of *Celtis occidentalis*, Rooks county (Bartholomew). L. c., 331.

122. Teichospora nubilosa E. & E. On outer bark of *Celtis occidentalis*, Rooks county (Bartholomew). L. c., 332.

123. Teichospora minima E. & E. On a dry oak post, Rockport, October, 1894 (Bartholomew). L. c., 1895, 419.

124. Lophiostoma asperum E. & E. On outer bark of *Ulmus americana*, Rockport (Bartholomew). L. c., 1894, 332.

125. Lophiostoma speciosum E. & E. On bark of *Fraxinus viridis*, Rooks county (Bartholomew). L. c., 332.

126. Lophiostoma clavisporum E. & E. On dead culms of *Elymus canadensis*, Rooks county, March, 1895, 419.

127. Lophidium pachystomum E. & E. On outer bark of *Populus monilifera*, Kansas (Bartholomew). L. c., 1894, 333.

128. Lophidium confertum E. & E. On decorticated, decaying limbs of *Fraxinus viridis*, Trego county (Bartholomew). L. c., 334.

129. Didymosphæria celtidis E. & E. On dead limbs of *Celtis occidentalis*, Rooks county, May, 1895 (Bartholomew). L. c., 1895, 421.

130. Leptosphæria occidentalis E. & E. On *Panicum crus-galli*, Rooks county (Bartholomew). N. A. Fungi, Cent. xxx, 1893.

131. Metasphæria maximiliani E. & E. On dead stems of *Helianthus maximiliani*, Rockport (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, 136.

132. Ophiobolus helianthi E. & E. On dead stems of *Helianthus maximiliani*, Rooks county, March, 1895 (Bartholomew). L. c., 1895, 423.

133. Thyridium pallidum E. & E. On dead stems of *Rhus glabra*, Rooks county, May, 1895 (Bartholomew). There is no outward indication of the fungus except the numerous, small, round perforations in the epidermis; but, when this is stripped off, the surface of the inner bark is seen to be dotted with the round, pallid, slightly-prominent apices of the perithecia. L. c., 1895, 424.

134. Anthostomella suberumpens E. & E. On inner surface of loosened elm bark, Rooks county (Bartholomew.) L. c., 1894, 338.

135. Eutypella amorphæ E. & E. On dead stems of *Amorpha fruticosa*, Rooks county (Bartholomew). L. c., 1894, 140.

136. Diaporthe stereostoma E. & E. On dead branches of *Symphoricarpos occidentalis*, Rooks county (Bartholomew). L. c., 1894, 338.

137. Valsa ribicola E. & E. On dead *Ribes aureum*, Rooks county (Bartholomew). L. c., p. 340.

138. Calosphæria cornicola E. & E. On dead limbs of *Cornus asperifolia*, Rooks county (Bartholomew). L. c., p. 342.

139. Pseudovalsa viticola E. & E. On dead shoots of *Vitis riparia*, Rockport (Batholomew). L. c., p. 343.

140. Valsaria allantospora E. & E. On dead *Negundo aceroides*, Rooks county (Bartholomew). L. c., p. 343.

141. Diatrype celastrina E. & E. On dead stems of *Celastrus scandens*, Rooks county (Bartholomew). L. c., p. 343.

142. Anthostoma formosum E. & E. On bark of dead *Celtis occidentalis*, Rooks county (Bartholomew). L. c., 344.

143. Diatrypella fraxini E. & E. On dead limbs of *Fraxinus viridis*, Rooks county, July, 1895 (Bartholomew). L. c., 1895, 426.

144. Phyllachora asterigena E. & E. On living leaves of *Aster oblongifolius*, Rooks county (Bartholomew). L. c., 1894, 345.

145. Histerium cedrinum E. & E. On weather-beaten wood of white cedar post, Rockport (Bartholomew). L. c., p. 346.

Discomycetes (*Cup Fungi*).

146. Cenangella violacea E. & E. On an old cottonwood board, Rooks county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, 149.

147. Cenangella thujina E. & B. An exposed wood of white cedar post, Rockport, February, 1894 (Bartholomew). Erythea, 1896, p. 3.

148. Blitrydium symphoricarpi E. & E. On dead twigs of *Symphocarpos vulgaris*, Rooks county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1895, 427.

149. Dothidella longissima (Pers.) E. & E. On dead stems of *Chenopodium album*, Kansas (Bartholomew & Shear). L. c., 1895, 427.

150. Stictis fusca E. & B. On dead branches of *Symphoricarpos occidentalis*, Rooks county, February, 1894 (Bartholomew). Erythea, 1896, 3.

151. Patellea hysterioides E. & E. On weather-beaten pine lumber, Rooks county (Bartholomew). L. c., 1895, 429.

Ustilaginæ (*Smuts*).

152. Ustilago sorghi Pass. Common on sorghum; on kaffir-corn, Manhattan (Kellerman); and on broom corn, Phillipsburg. J. B. S. Norton, in Trans. Acad. Sci. of St. Louis, 1896, p. 231, pl. xxv, figs. 1–5.

152. Ustilago ischæmi Fuckel. In inflorescence of *Andropogon provincialis*, Rooks county, E. Bartholomew. Norton, l. c., p. 231.

153. Ustilago austro-americana Speg. In inflorescence of *Polygonum pennsylvanicum*, Riley and Republic counties. Norton, l. c., p. 231, pl. xxviii, figs. 9–12.

154. Ustilago aristidæ Peck. In ovaries of *Aristida*, Hodgeman and Ellis counties. Norton, l. c., p. 232, pl. xxv, figs. 19–23.

155. Ustilago spermophora Berk. & Curt. In ovaries of *Eragrostis major*. Norton, l. c., p. 233.

156. Ustilago vilfæ Wint. In inflorescence of *Sporobolus vaginæflorus*. Manhattan, December, 1895. Norton, l. c., p. 233.

157. Ustilago rabenhorstiana Kuhn. Common in inflorescence of *Panicum sanguinale*, and less often on *P. glabrum*. Norton, l. c., p. 233, pl. xxvi, figs. 4, 5, and xxvii, 6–8.

158. Ustilago reiliana Kuhn. On sorghum, Manhattan, and on corn, Riley, Morris, Saline, Jewell and Geary counties; rather common. Norton, l. c., p. 233, pl. xxv, figs. 14–18.

159. Ustilago neglecta Niessl. On *setaria glauca*, Manhattan. Norton, l. c., p. 234, pl. xxviii, figs. 7, 8.

160. Ustilago syntherismæ Ell. & Everh. On *Panicum*, *Cenchrus*, etc., Manhattan; rather common. Norton, p. 235; pl. xxvi, figs. 1–3, 6–13; xxvii, 1–3, 9–12; xxix, 6–8.

161. Ustilago utriculosa Tul. On *Polygonum acre*, Rooks and Barton counties, and *P. pennsylvanicum*, Riley. Norton, l. c., p. 236.

162. Ustilago andropogonis Kell. & Swing. Common on *Andropogon provincialis* from several places in the state, and on *A. hallii*, Arkalon and Harper. Norton, l. c., p. 236; pl. XXVI, figs. 14–17.

163. Ustilago boutelouæ K. & S. In ovaries of *Bouteloua oligostachya*, Rooks and Riley counties. Norton, l. c., p. 236; pl. XXIX, fig. 11.

164. Ustilago pustulata Tracy and Earle. On *Panicum proliferum*, Pottawatomie county (Crevecœur). Norton, l. c., p. 237.

165. Ustilago filifera Norton. On *Bouteloua racemosa* and *P. oligostachya*, Riley and Wabaunsee counties. Norton, l. c., 1896, p. 237; pl. XXVIII, figs. 1 2, 4–6; XXIX, 1–4, 9, 10.

166. Ustilago minor Norton. On leaves of *Bouteloua hirsuta*, Manhattan; rare. Norton, l. c., p. 238; pl. XXVIII, fig. 3; XXIX, 5, 12.

167. Tilletia fœtans Schroet. On wheat, common, Kansas. Norton, l. c., p. 238.

168. Tilletia tritici Wint. On wheat, Rooks and Greeley counties. Norton, l. c., p. 238.

169. Tilletia buchloeana K. & S. In ovaries of *Buchloe dactyloides*, Jewell county (Miss Dahl); Trego and Ford counties (Kellerman & Swingle). Norton, l. c., p. 239.

170. Tilletia rotundata E. & E. In ovaries of *Panicum virgatum*, Manhattan, December, 1895. Norton, l. c., p. 239.

171. Doassansia (probably occulta). On *Potamogeton*, Lawrence (M. A. Barber). Norton, l. c., p. 240, foot-note.

172. Sorosporium solidaginis E. & E. In the inflorescence of *Solidago missouriensis*, Rooks county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, p. 156.

173. Sorosporium atrum Peck. On *Carex pennsylvanica*, Manhattan, 1894 (J. E. Payne). Norton, Trans. Acad. Sci. St. L., 1896, 240.

174. Sorosporium cuneatum Schof. In stems and inflorescence of *Solidago missouriensis*, Rooks and Riley counties. Norton, l. c., p. 240; pl. XXVII, figs. 4, 5.

175. Urocystis anemonis Schroet. On leaves of *Anemone caroliniana*, Rooks county (Bartholomew). Norton, l. c., p. 240.

Uredinæ (*Rusts*).

176. Puccinia ludibunda E. & E. On leaves of *Carex sparganioides*, Rooks county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, 153.

177. Puccinia virgata E. & E. On dead leaves of *Panicum virgatum*, Rooks county (Bartholomew). L. c., 154.

178. Puccinia bartholomi Dietel. On *Bouteloua oligostachya*, Rooks county (Bartholomew). N. A. Fungi, Cent. XXX, 1893.

179. Puccinia kansensis E. & B. On leaves of *Buchloe dactyloides*, Rooks county, September, 1894 (Bartholomew). Erythea, 1896, p. 1.

180. Puccinia jubata E. & B. On culms and sheaths of *Hordeum jubatum*, Rooks county, March, 1895 (Bartholomew). L. c., p. 2.

181. Puccinia sparganioides E. & B. On *Carex sparganioides*, Rooks county, August, 1895 (Bartholomew). L. c., p. 2.

182. Puccinia triodiæ E. & B. On *Triodia purpurea*, Rooks county, August, 1895 (Bartholomew). L. c., p. 3.

183. Puccinia clavispora E. & B. On leaves of *Andropogon nutans*, Phillips county, 1895 (Bartholomew). L. c., 79.

184. Puccinia tecta E. & B. On leaves of *Carex sparganioides*, Rooks county, October, 1895 (Bartholomew). L. c., 79.

185. Uromyces sporoboli E. & E. On *Sporobolus asper*, Rooks county (Bartholomew). Proc. Acad. Nat. Sci., Phila., 1893, 155.

186. Æcidium cylindricum E. & E. On leaves of *Houstonia angustifolia*, Osborne county (C. L. Shear). Bull. Torr. Club, 1895, 61.

Sphæropsidæ (*Dust Fungi*).

187. Phyllosticta maculans Ell. & Everh. On fallen leaves of *Populus monilifera*, Rooks county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, p. 157.

188. Phyllosticta confertissima E. & E. On leaves of *Ulmus fulva*, Pottawatomie county (Bartholomew). L. c., 1895, 455.

189. Phyllosticta moricola E. & E. On seedling leaves of *Morus rubra*, Pottawatomie county (Bartholomew). L. c., 455.

190. Phoma viridis Ell. & Barth. On dead leaves of *Fraxinus viridis*, Rooks county, January, 1895 (Bartholomew). Erythea, 1896, p. 4.

191. Phoma ribis E. & B. On decorticated twigs of cultivated gooseberry, Rockport, March, 1895 (Bartholomew). L. c., p. 4.

192. Phoma biformis E. & B. On dead *Amorpha fruticosa*, Rooks county, March, 1896 (Bartholomew). L. c., 80.

193. Dothiorella concaviuscula E. & B. On dead branches of *Fraxinus viridis*, Rooks county, January, 1895 (Bartholomew). Erythea, 1896, 23.

194. Dothiorella negundinis E. & B. On bark of dead limbs of *Negundo aceroides*, August, 1894 (Bartholomew). L. c., 23.

195. Aposphæria amaranti E. & B. On dead stems of *Amarantus retroflexus*, Rockport (Bartholomew). L. c., p. 4.

196. Cytispora negundinis E. & E. On dead limbs of *Negundo aceroides*, Rockport (Bartholomew). Proc. Acad. Nat. Sci. Phila. 1894, 360.

197. Cytispora juglandicola E. & B. On bark of dead limbs of *Juglans nigra*, Rooks county, November, 1894 (Bartholomew). Erythea, 1896, p. 23.

198. Cytispora celastrina E. & B. On dead stems of *Celastrus scandens*, Rooks county, April, 1895 (Bartholomew). L. c., p. 80.

199. Cytispora gleditschiæ E. & B. On dead limbs of *Gleditschia triacanthos*, Rooks county, December, 1895 (Bartholomew). L. c., p. 80.

200. Sphæropsis vitigena E. & E. On dead shoots of cultivated grape-vines, Rockport (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, 160.

201. Sphæropsis amorphæ E. & B. On dead branches of *Amorpha fruticosa*, Rooks county, December, 1894 (Bartholomew). Erythea, 1896, 23.

202. Sphæropsis robiniæ E. & B. On dead branches of *Robinia pseudacacia*, Stockton, November, 1895 (Bartholomew). L. c., 81.

203. Sphæropsis triacanthi E. & B. On dead limbs of *Gleditschia triacanthos*, Rooks county, December, 1895 (Bartholomew). L. c., 81.

204. Haplosporella velata E. & B. On dead stems of *Celastrus scandens*, Rooks county, January, 1895 (Bartholomew). Erythea, 1896, 24.

205. Haplosporella longipes E. & B. On dead branches of *Morus*, Rooks county, December, 1895 (Bartholomew). L. c., 81.

206. Haplosporella negundinis E. & B. On fallen limbs of *Negundo aceroides*, Rooks county, February, 1896 (Bartholomew). L. c., 81.

207. Diplodia kansensis E. & E. On bleached, weather-beaten bark of *Juniperus virginiana*, Rockport (Bartholomew). Proc. Acad. Nat. Sci. Phila. 1894, 363.

208. Diplodia celastrina E. & E. On dead stems of *Celastrus scandens*, Rooks county (Bartholomew). L. c., 1895, 432.

209. Diplodia lophiostomoides E. & B. On decorticated limbs of *Negundo aceroides*, Rooks county, July, 1895 (Bartholomew). Erythea, 1896, p. 24.

210. Diplodia clavispora E. & B. On decaying wood of an old elm stump, Rooks county, May, 1894 (Bartholomew). L. c., 24.

211. Diplodia celtidigena E. & B. On fallen limbs of *Celtis occidentalis*, Phillips county, March, 1896 (Bartholomew). L. c., 82.

212. Diplodiella striispora E. & B. On decorticated cottonwood stump, Rooks county, January, 1894 (Bartholomew). L. c., 24.

213. Diplodina psoraleæ E. & B. On dead stems of *Psoralea tenuiflora*, Rooks county, December, 1893 (Bartholomew). L. c., 25.

214. Actinonema psoraleæ E. & E. On living leaves of *Psoralea digitata*, Rooks county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, 159.

215. Ascochyta rhei E. & E. On leaves of *Rheum rhaponticum*, Rockport (Bartholomew). L. c., 160.

216. Stagonospora strictæ E. & E. On leaves of *Carex stricta*, Rooks county (Bartholomew). L. c., 162.

217. Hendersonia staphylea E. & E. On *Euonymus atropurpureus*, Kansas (Kell. & Sw.) Proc. Acad. Nat. Sci. Phila., 1893, 162.

218. Hendersonia stygia E. & E. On decorticated bleached wood of a cottonwood log, Rooks county, December, 1893 (Bartholomew). L. c., 1894, 364.

219. Hendersonia pseudacaciæ E. & B. On dead limbs of *Robinia pseudacacia*, Rooks county, March, 1894 (Bartholomew). Erythea, 1896, 25.

220. Hendersonia fraxini E. & B. On dead limbs of *Fraxinus viridis*, Rooks county, March, 1895 (Bartholomew). L. c., 26.

221. Camerosporium celtidis E. & E. On dead limbs of *Celtis occidentalis*, Rooks county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1894, 366.

222. Septoria purpureocincta E. & E. On leaves of *Prunus americana*, Rooks county (Bartholomew). L. c., 1893, 163.

223. Septoria aurea E. & E. On leaves of *Ribes aureum*, Rockport (Bartholomew). L. c., 163.

224. Septoria gaillardiæ E. & E. On leaves of *Gaillardia pulchella*, Rockport (Bartholomew). L. c., 164.

225. Septoria lepachidis E. & E. On leaves of *Lepachys columnaris*, Rockport (Bartholomew). L. c., 164.

226. Septoria gigaspora E. & E. On leaves of *Celtis occidentalis*, Rooks county (Bartholomew). L. c., 1895, 458.

227. Septoria alba E. & B. On living leaves of *Silphium integrifolium*, Rooks county, August, 1894 (Bartholomew). Erythea, 1896, 25.

228. Septoria rhabdocarpa E. & B. On fallen leaves of *Populus monilifera*, Rooks county, September, 1894 (Bartholomew). L. c., 25.

229. Septoria incarnata E. & B. On living leaves of *Asclepias incarnata*, Rooks county, July, 1894 (Bartholomew). L. c., 25.

230. Pestalozzia kansensis E. & B. On old dead leaves of *Quercus macrocarpa*, Rooks county, January, 1894 (Bartholomew). L. c., 26.

231. Pestalozzia œnotheræ E. & B. On dead stems of *Œnothera biennis*, Rooks county, March, 1895 (Bartholomew). L. c., 26.

232. Pestalozzia fibriseda E. & B. On weatherbeaten wood of *Rhus glabra*, Rooks county (Bartholomew). L. c., 27.

233. Labrella infuscans E. & B. On weather-beaten pine boards, Rooks county, March, 1894 (Bartholomew). L. c., 27.

Hyphomycetes (*Mildews*).

234. Cercospora crotonis E. & E. On leaves of *Croton texensis*, Rockport (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, 170.

235. Cercospora ditissima E. & E. On leaves of *Cnicus undulatus*, Rockport (Bartholomew). L. c., 171.

236. Cercospora melanochæta E. & E. On leaves of *Celastrus scandens*, Pottawatomie county, October, 1893 (Bartholomew). L. c., 1894, 380.

237. Cercospora didymospora E. & B. On capsules and leaves of *Œnothera fremontii*, Rooks county, July, 1894 (Bartholomew). Erythea, 1896, 28.

238. Cercospora physalicola E. & B. On living leaves of *Physalis virginica*, Rooks county, July, 1894 (Bartholomew). L. c., 28.

239. Cercosporella nivea E. & B. On living leaves of *Solidago radula*, Rooks county, September, 1895 (Bartholomew). L. c., 82.

240. Cladosporium aterimum E. & E. On rotton wood, Rockport, November, 1893 (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1894, 378.

241. Cladosporium subsessile E. & B. On living stems of *Populus monilifera*, Rooks county, September, 1894 (Bartholomew). Erythea, 1896, pp. 27 and 83.

242. Macrosporium amaranthi Peck. On dead spots of leaves of *Amaranthus retroflexus*, Rooks county (Bartholomew). Bull. Torr. Bot. Club, 1895, 493.

243. Macrosporium clematidis Peck. On living or languishing leaves of *Clematis fremontii*, Kansas (Bartholomew). L. c., 493.

244. Macrosporium nelumbii E. & E. On leaves of *Nelumbium luteum*, Pottawatomie county (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1895, 464.

245. Macrosporium panici E. & B. On living leaves of *Panicum virgatum*, Rooks county, July, 1894 (Bartholomew). Erythea, 1896, 28.

246. Macrosporium uredinis E. & B. On uredo of *Puccinia graminis* on "volunteer" oats, Rooks county, September, 1894 (Bartholomew). L. c., 28.

247. Coniosporium maydis E. & B. On old corn-stalks, Rooks county, July, 1895 (Bartholomew). L. c., 82.

248. Clasterosporium kansense E. & B. On under side of cottonwood post lying on the ground, Rockport, September, 1894 (Bartholomew). Erythea, 1896, 28.

249. Sporodesmium exasperatum E. & B. On the bottom of an oaken barrel in a cellar, Rooks county, May, 1894 (Bartholomew). L. c., 29.

250. Dendryphium curtipes E. & B. On the underside of an old hog trough, Rooks county, December, 1894 (Bartholomew). L. c., 82.

251. Volutella bartholomæi E. & E. On leaves of *Sporobolus asper*, Rockport (Bartholomew). Proc. Acad. Nat. Sci. Phila., 1893, 171.

It is not possible to tell exactly how many plants this makes for the State of Kansas, without making a new verified list. No doubt a good many plants are duplicated, owing to the uncertainty of determination, often, by students and other collectors, who sometimes reported plants that turned out to be something else. But, according to the best of our knowledge, the number of plants found in Kansas is as follows:

Catalogue of Prof. J. H. Carruth, of 1876, with additions up to 1884, 1,515 species, from which were deducted by Smyth, in 1890, on account of error or duplication, 145, leaving net	1,370
Fungi published by Cragin in Bull. Wash. Coll. Lab., 1884 to 1888, including 48 lichens published in Tuckerman's N. A. Fungi	373
Fungi published by Kellerman in Vol. X, Trans. Kan. Acad. Sci., 1886, (not counted in Cragin's lists)	266
Fungi published by Swingle in Vols. XI and XII, up to 1890	33
Plants published by other people, in various publications	48
Additions by Smyth, made in Vol. XII, 1890	447
Additions by Smyth in 1892 (Vol. XIII)	155
Additions by Smyth in 1894 (Vol. XIV)	27
Additional mosses by Miss Reed. in Vol. XIV, 1894	54
Additions in this list by Smyth, including a part of those published by Bartholomew and others, outside the state	251
Total to date	3,024

The total number of species of flowering plants reported as found in the state is 1,997; and of cryptogamic plants of all kinds, including ferns, mosses, liverworts, lichens, algæ, and parasitic fungi, 1,027. Much more remains to be done; and with active botanical workers in the state, the chances are that before long there will be a greater list of veritable species reported from Kansas than from any other state, except California.

THE PROPAGATION OF ERYTHRONIUMS.

By E. B. KNERR, Atchison, Kan. Read before the Academy January 2, 1897.

Possibly none of our native flowering plants are more interesting than the Erythroniums, or dog-tooth violets or adder-tongues, as they are popularly known. Certainly none are more beautiful.

Along the bluffs of the Missouri river we find but two species — the Erythronium albidum and the Erythronium mesochoreum; however, in the woods about my Ohio home, I was familiar with the Erythronium americanum as well as Erythronium albidum.

In this paper I desire to present an account of the various modes of propagation by corms followed in the three species mentioned.

Whoever has studied botany is well aware of the fact that our native Erythroniums present two forms of plants — a two-leaved flowering form and a single-leaved sterile form. Now it is these sterile or flowerless forms which I have found so interesting, and which most writers in descriptive botany seem to have inexcusably overlooked, and to these I would especially direct attention at the present time.

In both Erythronium americanum or yellow adder-tongue of the East, and in E. albidum, the white dog-tooth violet of the Mississippi valley, the flowerless forms are exceedingly numerous, covering almost completely with a continuous mat of erect, glossy, richly-mottled leaves the sloping sides of the shaded ravines where they occur. The explanation for this wealth of vegetation is not far to seek. Carefully remove a specimen of the one-leaved form of the yellow adder-tongue from the rich leaf-mold in which it grows, and usually three or more offshoots will be observed to have taken their rise from the parent corm. These offshoots are quite brittle, and hence care must be exercised in taking up the plants. At the end of each shoot will be found a slight enlargement, which develops into a corm by the time the parent plant and runners have withered. These corms are capable of producing only one-leaved plants the next season. Thus, where this year appeared but one plant, next year in close proximity will spring up three and possibly four plants to represent it, provided that meanwhile some hungry wood-mouse, mole, grub or worm has not made a dinner of some of the young and tender, juicy corms. A peculiarity of the offshoots in E. americanum is that at first they are usually directed upward, so that they may even rise above ground; and then they bend gracefully over and again seek to enter the spongy leaf-mold, planting the terminal corm, sometimes after devious turnings and twistings, as much as 6 or 8 inches, or possibly 10, from the site of the parent plant. The advantage of new forage ground is thus gained for the progeny plants. Occasionally flowering forms will also be found whose corms throw out offshoots. Of course such corms will not flower next season, and will send up only single leaves because of their divided vitality. This fact explains